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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Defense Information Systems Agency	Date: February 2018
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Appropriation/Budget Activity	R-1 Program Element (Number/Name)											
0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 7: Operational Systems Development</i>	PE 0303153K / <i>Defense Spectrum Organization</i>											
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	171.579	12.686	8.750	7.570	-	7.570	9.698	9.836	9.251	8.292	Continuing	Continuing
JS1: <i>Joint Spectrum Center</i>	171.579	12.686	8.750	7.570	-	7.570	9.698	9.836	9.251	8.292	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Defense Spectrum Organization (DSO) provides a full array of electromagnetic spectrum services and capabilities, ranging from short notice on-the-ground operational support at the forward edge, to long range planning in pursuit of national strategic objectives. These services/capabilities are in direct support of Combatant Commanders, the Department of Defense (DoD) Chief Information Officer, Military Services, and Defense Agencies. The DSO is the focal point for electromagnetic spectrum analysis and the development of integrated spectrum plans and strategies to address current and future needs for DoD spectrum access. In addition, DSO serves as DoD's spectrum advocate at national and international forums and conducts extensive outreach to both industry and government. DSO also implements enterprise spectrum management capabilities to enhance spectrum efficiency and agility to improve spectrum-dependent capabilities in support of United States and Coalition operations. This includes acquiring, implementing and sustaining the Global Electromagnetic Spectrum Information System (GEMSIS) which provides an integrated catalog of joint net-centric spectrum management tools and services. Electromagnetic Spectrum Management enables information dominance through effective spectrum operations.

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	13.197	8.750	9.073	-	9.073
Current President's Budget	12.686	8.750	7.570	-	7.570
Total Adjustments	-0.511	0.000	-1.503	-	-1.503
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-0.511	0.000	-1.503	-	-1.503

Change Summary Explanation

The decrease of -\$1.503 in FY 2019 is due to a reduction in the number of prototype assessments for future capabilities. The FY 2019 funding request was reduced by -\$1.425 to account for the availability of prior year execution balances.

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Appropriation/Budget Activity 0400 / 7					R-1 Program Element (Number/Name) PE 0303153K / Defense Spectrum Organization				Project (Number/Name) JS1 / Joint Spectrum Center			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
JS1: Joint Spectrum Center	171.579	12.686	8.750	7.570	-	7.570	9.698	9.836	9.251	8.292	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
The Joint Spectrum Center (JSC), which is a division of Defense Spectrum Organization (DSO), designs, develops, and maintains Department of Defense (DoD) automated spectrum management systems, evaluation tools, and databases. The databases are the prime sources of information for DoD use of the electromagnetic (EM) spectrum. The JSC provides technical measurement and analysis in support of DoD spectrum policy decisions to ensure the development, acquisition, and operational deployment of systems are compatible with other spectrum dependent systems operating within the same EM environment (EME). Additional efforts focus on improving future warfighter EM spectrum utilization through technological innovation, and influencing research and development emerging technology efforts.												
Improved spectrum support includes the Global Electromagnetic Spectrum Information System (GEMSIS), a net centric capability that will provide commanders with an increased common picture of spectrum situational awareness of friendly and hostile forces while transparently deconflicting competing mission requirements for spectrum use. This capability will enable the transformation from the current preplanned and static assignment strategy into autonomous and adaptive spectrum operations.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Advanced Spectrum Tools									0.883	0.883	0.883	
Description: The Joint Spectrum Data Repository and Tools program supports development of spectrum management tools, spectrum modeling and simulation capabilities, spectrum database development, and spectrum data transformation and standardization. This program provides the Combatant Commands (COCOMs) and Military Services with the spectrum management tools and associated databases to manage spectrum resources at the strategic and operational level. It also provides the DoD acquisition community with analytical tools to conduct Electromagnetic Environmental Effects (E3) analyses and Spectrum Supportability Risk Assessments (SSRA).												
FY 2018 Plans:												
Enhancements to Spectrum Technology and Testbed Initiative in support of Spectrum Engineering Analysis and Relocation efforts. Supports evaluation of future and existing spectrum analysis tools.												
FY 2019 Plans:												
Will continue to make enhancements to Spectrum Technology and Testbed Initiative in support of Spectrum Engineering Analysis and Relocation efforts. Supports evaluation of future and existing spectrum analysis tools.												
Title: DoD Electromagnetic Environmental Effects (E3) Program									0.000	3.315	3.315	

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
<p>Description: The DoD E3 Program supports the Joint Capabilities Integration and Development System (JCIDS) process and the DoD acquisition process to ensure that E3 control and spectrum supportability are incorporated into the development, testing, and procurement of information technology and National Security Systems. The E3 Program also supports the development of the Joint Ordnance E3 Risk Assessment Database (JOERAD) and Hazards of Electromagnetic Radiation to Ordnance (HERO) electromagnetic environmental effects surveys in support of the COCOMs and Joint Task Forces. JOERAD develops algorithms and provides analytical capabilities to perform real-time risk assessments to evaluate platform/system safety and identify equipment limitations in the operational EM environment. JOERAD enables operators to make critical decisions about the hazards associated with the use of ordnance within complex EM environments. A SSRA is performed by program managers and materiel developers on all programs that are acquiring or incorporating spectrum-dependent systems or equipment per DoDI 4650.1. These assessments encompassed regulatory, technical, and operational spectrum and E3 issues and associated risks.</p> <p>FY 2018 Plans: Enhancements to Spectrum Technology and Testbed Initiative in support of Spectrum Engineering Analysis and Relocation efforts. Supports evaluation of future and existing spectrum analysis tools.</p> <p>The increase of +\$3.315 from FY 2017 to FY 2018 supports additional HERO surveys for Forward Deployed Forces, Ordnance suscepibility updates, and acquisition program E3 reviews and guidance.</p> <p>FY 2019 Plans: Will continue to conduct Joint Ordnance Commanders Group (JOCG) HERO Subgroup meetings, support the JOCG Executive Steering Committee and develop and maintain the Services’ HERO susceptibility data records. Will conduct forward deployed base HERO surveys for the COCOMs/Services, and CONUS based equipment which emits radio frequencies (emitter) surveys for ordnance safety database validation and update the DoD ordnance Radio Frequency (RF) safety requirements. Will update MIL-HDBK-235, “Electromagnetic Environment (EME) Profiles” and develop EME (profiles to address blue force jammer and electronic warfare environments. Will conduct monthly DoD E3 Integrated Product Team (IPT) Meetings. Will provide technical support to DoD CIO, the Joint Staff, and other DoD Components on E3, spectrum, hazards of EM radiation matters. Will review JCIDS and Information Support Plan (ISP) acquisition documents assigned by the Joint Staff and DoD CIO and update guidance instructions as necessary. Will provide E3 and SS training to the DoD Components and develop/maintain training curricula at the Defense Acquisition University.</p>				
<p>Title: Emerging Spectrum Technologies (EST)</p> <p>Description: DSO has the responsibility to investigate emerging spectrum related technologies and evaluate their applicability to improve future warfighter EM spectrum utilization through technological innovation. The goal of the EST program is to identify the opportunities and risks associated with emerging spectrum-related technologies in the early stages of the technology</p>		3.251	3.715	2.566

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
<p>development, influence and lead technology development in order to maximize DoD spectrum utilization, and ensure that spectrum policies incorporate optimal technology to meet DoD mission requirements. Within EST there is an increased focus on Dynamic Spectrum Access (DSA). DSA is realized through wireless networking architectures and technologies that enable wireless devices to dynamically adapt their spectrum access according to criteria such as policy constraints, spectrum availability, propagation environment, and application performance requirements.</p> <p>FY 2018 Plans: Will continue collaboration efforts with the Science and Technology community (including ASDR&E, Service Labs and DARPA) to develop and execute the technology roadmaps and integration strategies that result in system flexibility and operational agility. Revisions will be made to the current spectrum management architecture to reflect transforming spectrum operations through application of EST in accordance with the new DoD EMS Spectrum Strategy. Prototype capabilities that provide increased operational agility will be developed and demonstrated. Continue to develop initiatives that include the roadmap, standards, architecture, and business processes to exploit and/or minimize the impact of emerging technologies on DoD spectrum operations.</p> <p>The increase of +\$0.464 from FY 2017 to FY 2018 will begin examination and impact assessments of the most mature portions of the SAR&DP, STR, and AWS-3 SSTD efforts. Produce specific algorithmic and technique changes associated with specific tools and techniques in current use. Prototype implementations to verify viability and collect metrics on improvements.</p> <p>FY 2019 Plans: Will continue collaboration efforts with the Science and Technology community (including ASDR&E, Service Labs and DARPA) to develop and execute the technology roadmaps and integration strategies that result in system flexibility and operational agility. Revisions will be made to the current spectrum management architecture to reflect transforming spectrum operations through application of EST in accordance with the new DoD EMS Spectrum Strategy. Prototype capabilities that provide increased operational agility will be developed and demonstrated. Continue to develop initiatives that include the roadmap, standards, architecture, and business processes to exploit and/or minimize the impact of emerging technologies on DoD spectrum operations.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: The increase of +\$1.149 from FY 2018 to FY 2019 is due to an increase in the number of prototype assessments that will be accomplished during FY 2019.</p>				
Title: Global Electromagnetic Spectrum Information System (GEMSIS)		8.552	0.837	0.806
Description: The GEMSIS is a net centric capability that will provide operational commanders with an increased common picture of spectrum situational awareness of friendly and hostile forces while transparently deconflicting competing mission requirements				

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B. Accomplishments/Planned Programs (\$ in Millions)							FY 2017	FY 2018	FY 2019		
for spectrum use. This capability will enable the transformation from the current preplanned and static assignment strategy into autonomous and adaptive spectrum operations.											
FY 2018 Plans: Continue Spectrum XXI (SXXI) Legacy, End to End Supportability System (E2ESS), and JSDR maintenance and version releases.											
The decrease of -\$7.715 in FY 2018 is due to completion of Increment 2 development efforts. Part of the overall decrease (- \$0.328) is attributed to the Service Requirements Review Board (SSRB) contract reduction.											
FY 2019 Plans: Continue SXXI Legacy, E2ESS, and Joint Spectrum Data Repository (JSDR) maintenance and version releases.											
FY 2018 to FY 2019 Increase/Decrease Statement: The decrease of -\$0.031 FY 2018 to FY 2019 is due to reduction in contract requirements to support software version releases.											
Accomplishments/Planned Programs Subtotals							12.686	8.750	7.570		
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• O&M, DW/PE	33.014	36.408	35.707	-	35.707	36.072	36.067	-	-	Continuing	Continuing
0303153K: O&M, DW											
Remarks											
D. Acquisition Strategy											
Engineering support services are provided by the use of a contract. No in-house government capability exists, nor is it practical to develop one that can provide the expertise necessary to fulfill the mission and responsibilities of DSO. Full and open competition was used for the current contract with EXELIS, Inc. GEMSIS' acquisition approach is to obtain capabilities by adopting existing capabilities, buying commercial products, or developing new capabilities by delivering incrementally within the context of a streamlined and adaptive acquisition approach.											
E. Performance Metrics											
1. Provide engineering support to DoD Components to ensure E3 and spectrum supportability requirements are addressed during the acquisition life-cycle meeting at least 90% of program suspenses.											
2. Execute effective emerging spectrum technologies evaluation process that generates timely and relevant products evaluating at least 3 technologies per quarter.											

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<p>3. Provide technical E3 and spectrum engineering support upon request from the Combatant Commands, their components and the Military Services with a minimum 98% response rate.</p> <p>4. Develop an operational Joint spectrum management system that delivers at least 90% of products on schedule in accordance with objective scheduled events and deliverables as approved in the Acquisition Program Baseline- Schedule Status of systems.</p> <p>All metric results are classified.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Defense Information Systems Agency												Date: February 2018			
Appropriation/Budget Activity 0400 / 7						R-1 Program Element (Number/Name) PE 0303153K / Defense Spectrum Organization				Project (Number/Name) JS1 / Joint Spectrum Center					
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Technical Engineering Services 1	C/FFP	Multi : Various	156.086	11.365	Oct 2016	8.424	Oct 2017	7.240	Oct 2018	-		7.240	Continuing	Continuing	Continuing
Technical Engineering Services 2	MIPR	Various : Various	4.427	1.016	Oct 2016	0.326	Oct 2017	0.330	Oct 2018	-		0.330	Continuing	Continuing	Continuing
Subtotal			160.513	12.381		8.750		7.570		-		7.570	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test & Evaluation	MIPR	JITC : Ft. Huachuca	2.312	-		-		-		-		-	0.000	2.312	2.312
Subtotal			2.312	-		-		-		-		-	0.000	2.312	N/A
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Management Services	FFRDC	MITRE : Ft. Monmouth, NJ	8.754	0.305	Oct 2016	-		-		-		-	Continuing	Continuing	Continuing
Subtotal			8.754	0.305		-		-		-		-	Continuing	Continuing	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			171.579	12.686		8.750		7.570		-		7.570	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Defense Information Systems Agency																Date: February 2018			
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Joint Spectrum Center																												
Spectrum Tool (SXXI, CJSMP, JSR) Version Releases																												
Joint Ordnance E3 Risk Assessment Database (JOERAD) Releases																												
Emerging Spectrum Technology Research Projects																												
Spectrum Data Sharing Capability Deployments																												
Increment Two GEMIS																												
E3 Program Outputs																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Defense Information Systems Agency			Date: February 2018
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0303153K / <i>Defense Spectrum Organization</i>	Project (Number/Name) JS1 / <i>Joint Spectrum Center</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Joint Spectrum Center</i>				
Spectrum Tool (SXXI, CJSMP, JSDR) Version Releases	3	2017	4	2023
Joint Ordnance E3 Risk Assessment Database (JOERAD) Releases	3	2017	4	2023
Emerging Spectrum Technology Research Projects	3	2017	4	2023
Spectrum Data Sharing Capability Deployments	3	2017	4	2023
Increment Two GEMIS	1	2017	4	2018
E3 Program Outputs	1	2017	4	2023